

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently amended): A system comprising:

a removable electrical component;
a housing ~~eonfigured~~ to receive ~~the~~^{[[a]]} removable electrical component;
an assembly coupled with the housing, the assembly including a pin; and
a rotatable drive shaft coupled with the removable electrical component to engage the assembly, wherein the drive shaft includes a first helical groove to receive the pin and guide the pin along the shaft.

Claim 2 (Currently amended): The system of claim 1 further including a handle coupled with the removable electrical component, wherein rotation of the handle drives the shaft relative to the pin to move the removable electrical component relative to the housing.

Claim 3 (Original): The system of claim 1, wherein the drive shaft further comprises a first helical groove entry having a width greater than a width of the first helical groove, wherein at least a portion of the first helical groove entry is defined by a first inclined entry guide.

Claim 4 (Original): The system of claim 3, wherein the first inclined entry guide includes a first groove point disposed at a first end of the first inclined entry guide.

Claim 5 (Original): The system of claim 3, further comprising a transition portion disposed between the first inclined entry guide and the first helical groove.

Claim 6 (Previously Presented): The system of claim 1,

wherein the drive shaft includes a second helical groove having a second helical groove entry including a second groove point, wherein at least a portion of the second helical groove entry is defined by a second inclined entry guide.

Claim 7 (Original): The system of claim 1, further comprising a first detent forming a terminus of the first helical groove and configured to receive the pin.

Claim 8 (Original): The system of claim 7, further comprising a compression spring arranged so that as the pin travels along a portion of the first helical groove the compression spring is compressed and causes the pin to enter the first detent.

Claim 9 (Currently amended): The system of claim 1, wherein the removable electrical component is a printed circuit board and the printed circuit board is fully inserted and or extracted through rotation of the drive shaft.

Claim 10 (Currently amended): The system of claim 1, further comprising a locking device configured to prevent rotation of the handle relative to the removable electrical component device when the locking device is engaged.

Claim 11 (Currently amended): The system of claim 10, wherein the locking device further comprises:

a threaded member disposed within the handle; and
a threaded connector disposed within a housing coupled with the removable electrical component.

Claim 12 (Currently amended): A device for inserting and extracting a removable electrical component comprising:

a drive shaft fixed to the removable electrical component, wherein the drive shaft has having a proximal end and a distal end with a first helical groove disposed along the distal end, and wherein the first helical groove includes a first enlarged entry;

a handle coupled to the proximal end of the drive shaft; and

a receptacle assembly for mounting to a housing, wherein the receptacle assembly has having a first throughbore and a pin disposed within the throughbore, wherein the throughbore receives the distal end of the drive shaft and the drive shaft aligns the pin with the first helical groove so that rotation of the handle causes rotation of the drive shaft which causes the pin to travel along the first helical groove, wherein rotation of the drive shaft in a first direction causes the proximal-end removable electrical component to move towards the receptacle assembly and rotation in a second direction causes the proximal-end removable electrical component to move away from the receptacle assembly.

Claim 13 (Cancelled).

Claim 14 (Cancelled).

Claim 15 (Currently amended): The device of claim 1412, wherein the first object removable electrical component is a printed circuit board.

Claim 16 (Currently amended): The device of claim 1312, further comprising:

a spring surrounding a portion of the drive shaft within the housing; and

a detent located at a terminus of the first helical groove to receive the pin, wherein rotation of the drive shaft in the first direction compresses the spring and guides the pin to enter the detent.

Claim 17 (Original): The device of claim 12, wherein the first enlarged entry includes a first inclined entry guide.

Claim 18 (Original): The device of claim 17, wherein the first enlarged entry includes a second inclined entry guide, and further wherein the first inclined entry guide and the second inclined entry guide taper toward one another.

Claim 19 (Original): The device of claim 18, wherein the first inclined entry guide and the second inclined entry guide are formed from a first groove point and a second groove point.

Claim 20 (Original): The device of claim 18, further comprising a second helical groove having a second enlarged entry.

Claim 21 (Original): The device of claim 20, wherein the second enlarged entry includes a third inclined entry guide.

Claim 22 (Original): The device of claim 21, wherein the second enlarged entry includes a fourth inclined entry guide, and further wherein the third inclined entry guide and the fourth inclined entry guide taper toward one another.

Claim 23 (Original): The device of claim 22, wherein the third inclined entry guide and the fourth inclined entry guide are formed from the first groove point and the second groove point.

Claim 24 (Original): The device of claim 12, further comprising:
a locking member located within the handle; and
a locking mechanism configured to receive the locking member and prevent rotation of the handle.

Claim 25 (Original): The device of claim 24, wherein the locking mechanism is a threaded member and the locking mechanism is a threaded connector.

Claim 26 (Currently Amended): A method comprising:

inserting a first tip of a first drive shaft attached to ~~a first number~~ a printed circuit board into a first receptacle assembly attached to a ~~second number~~ device so that a first helical groove on the first drive shaft aligns with a first pin located within the first receptacle assembly; and

inserting a second tip of a second drive shaft attached to the printed circuit board into a second receptacle assembly attached to the device so that a second helical groove on the second drive shaft aligns with a second pin located within the second receptacle assembly; and

rotating a first handle coupled with the first drive shaft and a second handle coupled to the second drive shaft in a first direction to rotate the first drive shaft and the second drive shaft and thereby move the printed circuit board ~~first number~~ toward the ~~second number~~ device.

Claim 27 (Currently amended): The method of claim 26, further comprising rotating the first handle and the second handle in a second direction to extract the printed circuit board from the device system board.

Claim 28 (Currently Amended): The method of claim 26, further comprising securing the first handle relative to the first receptacle assembly to prevent rotation of the first handle.

Claim 29 (Canceled).

Claim 30 (Currently Amended): The method of claim 26, wherein ~~a single~~ rotation of the first handle and the second handle ~~fully seats the first number~~ coupling the printed circuit board to a socket within the device against the second number.

Claim 31 (Currently Amended): An insertion and extraction device for inserting and extracting a first object into a second object comprising:
a drive shaft having a helical groove;
means for coupling the drive shaft to a removable electrical component to assist in the insertion and extraction of the removable electrical component from an electrical device;
means for automatically aligning a the drive shaft having a helical groove with a fixed receptacle assembly of the electrical device; and
means for moving the first object the removable electrical component along a linear path due to rotation of the drive shaft.

Claim 32 (Original): The device of claim 31, further comprising means for indicating that the drive shaft has fully entered the receptacle assembly.

Claim 33 (Original): The device of claim 31, further comprising means for securing a handle coupled with the drive shaft relative to the receptacle assembly.

Claim 34 (Currently amended): The system of claim 1, wherein
the housing comprises a housing for an electrical device and the removable electrical component comprises a printed circuit board,
the rotatable drive shaft is mounted to the printed circuit board for assisting in the insertion and extraction of printed circuit board from the electrical device, and
the assembly is mounted to the housing of the electrical device to engage the drive shaft and urge the printed circuit board linearly into the network device.

Claim 35 (Previously Presented): The system of claim 34, wherein
the drive shaft has a proximal end having a handle for rotation of the drive shaft and a distal end along which the first helical groove is disposed,

rotation of the drive shaft in a first direction causes the proximal end to move toward the assembly to urge the printed circuit board linearly into the electrical device, and

rotation of the drive shaft in a second direction causes the proximal end to move away from the assembly to urge the printed circuit board linearly away from the electrical device.

Claim 36 (Previously Presented): The system of claim 35, wherein
the assembly coupled to the housing includes a first throughbore and the pin of the assembly is disposed within the throughbore, and

the throughbore receives the distal end of the drive shaft coupled to the printed circuit board, and aligns the pin with the first helical groove of the drive shaft so that rotation of the handle causes rotation of the drive shaft and urges the pin to travel along the first helical groove.

Claim 37 (New): A system comprising:
a printed circuit board;
a housing for an electrical device that receives the printed circuit board;
an assembly mounted to the housing, the assembly including a pin; and
a rotatable drive shaft mounted to the printed circuit board to engage the assembly and assist in the insertion and extraction of the printed circuit board, wherein the drive shaft includes a first helical groove to receive the pin and guide the pin along the drive shaft and urge the printed circuit board linearly into the electrical device.

Claim 38 (New): The system of claim 37, wherein

the drive shaft has a proximal end having a handle for rotation of the drive shaft and a distal end along which the first helical groove is disposed,

rotation of the drive shaft in a first direction causes the proximal end to move toward the assembly to urge the printed circuit board linearly into the electrical device, and

rotation of the drive shaft in a second direction causes the proximal end to move away from the assembly to urge the printed circuit board linearly away from the electrical device.

Claim 39 (New): The system of claim 38, wherein

the assembly coupled to the housing includes a first throughbore and the pin of the assembly is disposed within the throughbore, and

the throughbore receives the distal end of the drive shaft coupled to the printed circuit board, and aligns the pin with the first helical groove of the drive shaft so that rotation of the handle causes rotation of the drive shaft and urges the pin to travel along the first helical groove.